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My comments on this paper and on the underlying research are in three categories: (1) a very favorable overall evaluation of the paper, (2) differences in emphasis regarding specific areas of research described in the paper, and (3) suggestions of tentative guidelines for using the implications of this research to improve auditor judgments.

Overall Comments

The paper does an excellent job of accomplishing its stated objective of reviewing and synthesizing the research in a manner designed to "introduce the body of knowledge to readers who are relatively unfamiliar with it." As mentioned in the paper, readers who wish to investigate the area in greater depth should refer to the recent monographs by Ashton (1982) and Libby (1981).

In this paper, Ashton provides helpful descriptions of six criteria used by researchers to evaluate auditors' judgments: accuracy, normativeness, stability, consensus, insight, and consistency with professional auditing standards. The distinction between accuracy and normativeness is important. Although auditor judgments are very rarely susceptible to evaluation by an accuracy criterion (because of the unavailability of external, verifiable reference points), they can often be evaluated on the basis of their degree of correspondence with normative or statistical standards. Furthermore, when neither accuracy nor normativeness criteria are feasible in the circumstances, researchers often utilize consensus, stability, or insight. Such criteria are helpful because evidence of lack of consensus or stability provides an indication of the lack of accuracy and normativeness. However, the converse does not logically follow—a high degree of consensus or stability does not necessarily indicate a high degree of accuracy or conformity with normative standards.

The issue of whether auditors' judgments are more accurately described as rather good or rather poor is not as important as the issue of how such judgments can be improved. I agree with Ashton's conclusions that the ultimate goal of this research is to improve auditors' judgments and that the most salient common feature of efforts to improve such judgments is the establishment of suitable structures for the decision making process.

Differences in Emphasis Concerning Specific Research Findings

1. Materiality judgment research has been limited to public industrial companies. In discussing the research on auditors' materiality judgments, Ashton describes some of the general findings, and notes that "for virtully all auditors studied, impact on net income has been the most important factor in such judgments." However, the fact that virtually all of this research was limited to public industrial companies effectively restricts the ability to generalize the research results. I question whether the impact on net income would have the same predominance for a nonpublic company (where primary users are likely to be creditors with an interest in using various financial statement relationships to predict future solvency) as it has for a public company (where the primary users are likely to be investors with a primary interest in using income and cash flows from continuing operations to predict future cash flows). It is also doubtful whether this research (concerning public industrial companies) could be validly generalized to financial institutions or nonbusiness entities.

2. Auditor consensus regarding internal control evaluation may not be "relatively high." In discussing the results of research (including his own) on auditor evaluations of internal control, Ashton concludes, "Consensus across auditors has been found to be relatively high for ratings of internal control strength." Categorizing auditor consensus in this area as "relatively high," however, may not be appropriate. The research that demonstrated a higher degree of consensus for such judgments than had been found generally for other professions (see Ashton, 1974) reported an average correlation of .7 between pairs of auditor judgments. Although the average correlation was generally higher than for other professions, it still explained only 49% of the variability in judgments. Furthermore, the correlations between judgments of some pairs of auditors in the Ashton study were as low as .04, and the introduction of a more realistic degree of complexity in the internal accounting control information presented to auditors resulted in a much lower degree of consensus (see Reckers and Taylor, 1979).

Suggested Guidelines for Improving Auditor Judgments

The goal of this research is to improve auditor decision making. Based upon the research findings, Ashton offers five decision-improvement alternatives and discusses some audit-practice examples that introduce a structured mechanism to improve auditor judgments. Although the alternatives and examples Ashton offers are helpful, the profession also has a need for general guidelines for utilizing this research to improve the audit judgment process. Accordingly, I believe the audit judgment process can be improved through an organized program that meets the following guidelines:

1. Recognize the capabilities as well as the limitations of individual experts in making audit judgments.
2. Identify potential decision aids.
3. Identify areas of comparative advantage of both the individual experts and the decision aids.
4. Develop structured frameworks that integrate the best features of both individual experts and decision aids.

The most difficult step in this process is the identification of the areas of comparative advantage of individual experts and decision models. The Ashton paper provides a good summary of the limitations of individual experts in making audit judgments, and the statistical and operations research literature identifies many potential decision aids. However, the research literature does not provide as clear or definitive directions regarding areas of comparative advantage. Nevertheless, I believe some general tendencies of comparative advantage can be identified, at least tentatively, as described below.

In identifying areas where individual experts do a better job than models (and conversely), it is helpful first to distinguish between unstructured and structured judgment situations. In unstructured situations, most decision models cannot effectively be applied, and individual experts are superior in identifying potential patterns and bringing about some type of structure. In structured situations, individual experts tend to be better at collecting and coding information relevant to the judgment, and decision models tend to be superior at combining and integrating the information.

For example, consider the process of confirming accounts receivable to form a judgment about the validity of recorded receivables. This situation is susceptible to being structured and successfully modeled in the sense that an appropriate sample size can be determined—given certain information such as required precision (tolerable error), required reliability, and expected error rate. After the sample of confirmations has been taken and the individual confirmation responses have been analyzed, the model can also be used to make inferences about the population of recorded receivables by computing an upper confidence limit. In this situation, the individual experts (auditors) can most effectively be used to *collect* the information (by preparing, reviewing, and sending the confirmation requests) and to *code* the information (by determining which sample items represent errors or invalid recorded receivables). The research has generally shown that the decision model is superior to individual experts (auditors) at *combining and integrating* the information in such audit situations. An effective and efficient audit process, therefore, will include a structured framework that provides the auditor with the decision model as an aid in the judgment process and thereby integrates tasks that are performed best by the individual expert with those that are performed best by a decision model.

Some recent trends have occurred in audit practice concerning the development of a structured approach for making audit judgments in areas that were previously regarded as being unstructured. Such approaches have tended to use decision models, statistical formulas, and other structured frameworks for combining and integrating information that has been gathered and coded by auditors. The above discussion concerning confirmations is an example related to tests of details. For analytical reviews, various structures (including the use of regression analysis) have been introduced to aid the auditor in integrating data. For evaluations of internal accounting control, decision tables and network analyses have been developed to evaluate the adequacy of segregation of duties. Audit risk models, such as the one described in SAS No. 39, have been utilized to aid the auditor in integrating the information from the various audit components—internal accounting control, analytical review, and tests of details. These examples not only indicate recent trends in practice, but they

also provide an indication of the likely directions for future improvements in the audit judgment process.

Conclusions

In summary, I believe the Ashton paper provides an excellent introduction to the research on auditor judgment. This research can also be used as a basis for developing tentative guidelines for future improvements in auditor judgments.

References

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